

phenomenon which terrified or arrested the attention of the inhabitants of the whole of this coast some two months ago. This was the fall of a shower of aërolites, with a brilliant stream of light accompanying them, and which extended from Tunis to Tripoli, some of the stones falling in the latter city.

"The alarm was very great in Tunis, and several Jews and Moors instinctively fled to the British Consulate, as the common refuge from every kind of evil and danger.

"The fall of these aërolites was followed by the severest or coldest winter which the inhabitants of Tunis and Tripoli have experienced for many years."

The reading of a paper, entitled "Discussion of Meteorological Observations taken in India at various heights." By Lieut.-Colonel Sykes, F.R.S. &c., was commenced, but was not concluded.

The Society then adjourned over the Easter recess, to meet again on the 11th of April.

April 11, 1850.

PROFESSOR OWEN, Esq., Vice-President, in the Chair.

Lieut.-Colonel Sykes's paper, entitled "Discussion of Meteorological Observations in India," was resumed and concluded.

The author adverts to a former paper "On the Meteorology of the Deccan," published in the Philosophical Transactions for 1835, and after referring to the conclusions at which he arrived in that communication, states that, in the discussion of the meteorological observations which form the subject of the present paper, and which were made over a very extended area, at different heights, some being hourly and running through several years at the same station, it is very satisfactory to find that they fully establish the accuracy of the former deductions. He remarks that, as some of the observations now discussed were hourly records continued through considerable periods of time, an opportunity has been afforded of investigating abnormal conditions, which the former limited number of diurnal observations did not permit; and gives the following review of what appears to be normal and abnormal conditions.

The annual and daily range of the barometer diminishes from the sea-level up to the greatest height observed, 8640 feet at Dodabetta, from a mean annual and mean daily range at Madras of 0·735 and 0·122 respectively to 0·410 and 0·060 at Dodabetta;—the annual range would appear to increase, about and beyond the northern tropic, as the annual range at Calcutta (not by hourly observations) is 0·911; but the diurnal range is somewhat less (0·115) than at Madras. At no one of the places of observation, even taking the maximum pressure of one year with the minimum pressure of another year, does there appear to have been a range of pressure equivalent

to an inch of mercury; nevertheless in the Cyclones, or rotatory storms, there occurs at times a range of pressure of nearly two inches of mercury within forty-eight hours; but it is shown from a comparison of the simultaneous records on board ship, where these great depressions were noted, with the records at the observatories on shore, that the great depressions occurred within very limited areas.

The author had formerly shown that the times or turning-points of ebb and flow (if the term be permitted) of the ærial ocean, were occasionally retarded or accelerated, although the means fixed the turning-points within certain limit hours; but he was not then aware that in the ebb or flow of the four daily tides, they ever retrograded or halted in their onward or retiring course. The hourly observations now show that abnormal conditions are of no infrequent occurrence,—that the tides at times flow or ebb for four, five, six or even seven and eight hours (one instance at Aden of nine hours),—that frequent instances occur of retrograde movements for short periods of time, as if the tide had met with a check and been turned back; and at the turning-points there are numerous instances of the atmosphere being stationary for a couple of hours.

The maximum pressure of the atmosphere is in the coldest months, December or January, but the minimum pressure is not in the hottest months, but in June or July. The barometric readings, when protracted, show a gradual curve from December or January descending to June or July, and then ascending again to December or January, there being an occasional interruption in October or November. As the curves at Madras, Bombay and Calcutta, correspond, and as Madras has *no* south-west monsoon, while Bombay has a south-west monsoon, and is destitute of the north-east monsoon of Madras, it would appear that the general movements of the atmosphere are little influenced by any conditions of its lower strata; but the curve of pressure would seem to have some relation to the sun's place in the ecliptic.

The normal conditions of daily temperature are, that it is coldest in India at sunrise, and hottest between the hours of 1 and 3 P.M.; but the tables show many aberrations from this rule. The regular increment or decrement of mean monthly heat from the maximum or minimum period is somewhat remarkable, as the curve is independent of the south-west monsoon at Bombay and the north-east monsoon at Madras; and the passage of the sun twice over both places does not derange the curve. The anomalies of the annual mean temperature of Madras, Bombay, Calcutta and Aden, not diminishing with the increase in the latitude of the respective places, are pointed out, and numerous instances are given of the very great power of the slanting rays of the sun beyond the tropic. As is the case with the barometric, so do the heat tables indicate that the annual and daily ranges of the thermometer diminish with the elevation of the place of observation above the sea-level, the elevated table-land of the Deccan however being an exception to this rule. At Mahabuleshwur, at 4500 feet, the temperature of the air was never below 45° with a maximum and minimum thermo-

meter; and at Dodabetta the temperature of the air was never below $38^{\circ}5$, nevertheless at both places ice and hoar-frost were frequently found on the ground at sunrise, resulting from the separate or conjoined effects of radiation and evaporation.

After stating the want of confidence he has in observations of the wet-bulb thermometer as a means of determining the dew-point, and that he greatly prefers Daniell's hygrometer for this purpose, the author observes that he will not venture to say more with respect to normal conditions of moisture in India than that the air of the sea coast has always a much greater fraction of saturation than the lands of the interior; and that the elevated plateau of the Deccan is periodically subject to very high degrees of dryness.

Some very unexpected phenomena with reference to the distribution of rain are pointed out. It is found both on the sea coasts and on the table-lands of the Deccan, that within very limited areas, the differences in the fall of rain may be very great. With nine rain-gauges employed in the small island of Bombay in the months of June and July, in the monsoon of 1849, the quantity collected in the different gauges ranged in July from 46 inches to 102 inches, and in June from 19 inches to 46 inches. At Sattarah, in the Deccan, with three rain-gauges within the distance of a mile, they differed in their contents several inches from each other; and at Mahabuleshwur and Paunchgunny, nearly on the same level, the latter place being only eleven miles to the eastward of the former, the annual fall of rain was 254 inches and 50 inches respectively! The normal conditions are, that there is a much greater fall of rain on the sea coasts than on the table-lands of the Deccan, but that the Ghats intervening between the coasts and the table-lands have three times the amount of the fall on the coasts, and from ten to fifteen times the amount of the fall on the table-lands of the interior; the paucity of the fall of rain at Cape Comorin and in the mouths of the Indus would also appear to be normal conditions.

The tables must be referred to for the winds; the normal states are those of the south-west and north-east monsoons, and the influence of the latter is periodically felt at the height of 8640 feet at Dodabetta, which height would appear just at the upper surface of the stratum of air constituting the south-west monsoon; but hourly observations for lengthened periods are necessary at Dodabetta, to determine what really are the periodical winds at that height. From the points other than those between south and west, and north and east, there is also at the several stations a certain amount of periodicity in the winds, the winds that are common to different stations having only a slant more or less at the different stations; for instance, the south-west and north-west winds of Bombay blowing in the summer months in Calcutta incline rather to be south and north winds, than south-west and north-west winds; but the author observes that to be enabled to speak with any precision upon this branch of the meteorology of India, and indeed upon most other branches with a comprehensive and philosophical object, hourly observations are necessary,—simultaneously taken with previously compared instruments by zealous observers;

and having the records in a form common to all the observers, so as to admit of rigid comparisons:—when this is done, not only in India but in Europe, meteorologists will be in a better condition to generalize and propound normal conditions, than the state of our knowledge at present would justify.

The author states that he is indebted to that very able and zealous meteorologist, Dr. Buist of Bombay, for the protracted curves of pressure of the barometer appended to his paper.

A paper was also read, entitled “On the Structure and Use of the Ligamentum rotundum Uteri, with some observations upon the change which takes place in the structure of the Uterus during Utero-gestation.” By G. Rainey, Esq., M.R.C.S.E., Demonstrator of Anatomy, St. Thomas’s Hospital. Communicated by Joseph H. Green, Esq., F.R.S.

The author first refers to the discovery of the difference which exists between the two classes of muscles; the voluntary, or those with striped fibres, and the involuntary, or those with unstriped fibres. He then notices that the opinion which is entertained respecting the round ligaments being composed of the unstriped variety of muscular fibre is incorrect, these organs consisting chiefly of the striped muscular fibre.

In support of the accuracy of this assertion, the author alleges the following facts:—

First, that the round ligament arises by three tendinous and fleshy fasciculi; one, from the tendon of the internal oblique, near the symphysis pubis, a middle one from the superior column of the external abdominal ring, the third from the inferior column of the same: from these points the fibres pass backwards and outwards, and uniting form a rounded cord—the round ligament; after which, traversing the broad ligament, they go to be inserted into the angle of the uterus.

The striped fibres are principally situated in its centre, and extend from its origin to within an inch or two of the fundus uteri; as they approach which, the fibres gradually lose the striated character and degenerate into fasciculi of granular fibres of the same kind as those of the Dartos muscle; both these fibres presenting similar microscopic characters when acted upon by glycerine.

The author then states that the round ligament does not pass through the external ring to be lost in the labia and mons veneris; and argues from the fact of their consisting mainly of striped fibres, &c., that their use cannot be merely mechanical or subservient to the process of utero-gestation, and therefore he concludes that its function must be connected in some way with the process of copulation.

He also adverts to the necessity of examining the round ligament by the microscope in glycerine in preference to any other fluid; as this substance renders the cellular tissue mixed with the fibres more transparent without diminishing the distinctness of their characteristic markings. The author next states his views on the changes